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The Tatujeikurajoyava (*Chlamyphorus retusus*) in the Izozog Communities of the Bolivian Gran Chaco

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The Gran Chaco is one of the largest biogeographic provinces in South America, covering one thirds of Paraguay, Argentina, Brazil, and Bolivia. The largest expanses of dry neotropical forest are found there, a region of great importance for its endemism of both plants and animals (Taber *et al.*, 1997; Redford *et al.*, 1990). The Bolivian Gran Chaco contains large tracts of the best conserved areas of the South American chaco biome (Taber *et al.*, 1997).

One of the endemic species of the dry chacoan ecosystem in Bolivia is *Chlamyphorus retusus*, locally known as “tatujeikurajoyava” or “culo tapado”. The biology, ecology and local distribution of this species is unknown (Anderson, 1997), and there are no current efforts to study or protect the species in Bolivia (Ergueta and de Morales, 1996).

The Izozog area, biogeographically situated in the Boreal Chaco Province (Navarro, 1997), lies



FIGURE 1: Tatujeikurajoyava, *Chlamyphorus retusus*.

300 km south-east of the city of Santa Cruz, Bolivia, between 19°50' S, 62°43'W and 19°10' S, 62°31'W. The altitude varies from 250 to 350 m above sea level. The mean annual rainfall is 550 mm and the mean annual temperature is 26°C. The wet season generally starts in December and ends in March or April (Navarro, 1997). The vegetation of the area is generally defined as chacoan xeric woodland with variants according to soil type (Taber *et al.*, 1997).

Since 1995, the Izoceño indigenous people, the largest group of subsistence hunters in the Bolivian Gran Chaco, have been implementing community wildlife management programs focused on game species in an effort to ensure sustainable exploitation. After ungulates, armadillos are the second most hunted group (Noss, 1998). From 1996 to 2000, local hunters reported hunting more than 2000 armadillos of the five species:

TABLE 1. Body measurements and weights of four specimens of *Chlamyphorus retusus*.

Sex	Head-Body Length mm	Tail mm	Hind-Foot mm	Ear mm	Weight g
Female	132	33	28	5	84.2
Female	125	35	30	5	63.5
Male	145	36	30	6	86.9 (without viscera)
Male	135	35	30	5	71.0



FIGURE 2: Tatujeikurajoyava, *Chlamyphorus retusus*.

Dasyplus novemcinctus, *Chaetophractus villosus*, *Chaetophractus vellerosus*, *Tolypeutes matacus*, and *Euphractus sexcinctus*. During the same 4-year period, only eight individuals of *Chlamyphorus retusus* were reported (six were killed by local people and two were found by biologists). *C. retusus* is not hunted for food but is killed whenever encountered, not only by hunters but also by Izoceño women and children. This persecution results from the belief that *Chlamyphorus retusus* is an omen of bad luck, foretelling an impending death in the family. This belief is deeply rooted in adults and children alike.

The six individuals which were killed were donated by the hunters and provide a unique source of information about this rare species in the area. They had been killed in or around communities where the soil is compacted and surrounded by sand (i.e., communal football pitch, patios, or houses). The animals were adults, and the measurements taken were from four specimens after fixing in formalin at 10% and alcohol at 70% (Table 1).

Despite the fact that biologists have been working in or near the Izozog communities, for four years, only two individuals of *Chlamyphorus retusus* have been seen, measured, photographed and released (Miserendino and Saavedra, pers. comm.). One of these was observed in the permanent research camp, 30 km away from the Izoceño communities. It appeared in the camp at 22:00 hrs, scuttling and sniffing its way along the ground, occasionally making quick, shallow excavations in search of

food. The individual responded to the approach of the observers by burying itself half way into the ground. It was a bright pink and had strong claws, and appeared to be in good health. The individual was a female with the following measurements: HB 135, T 35, HF 30, Ear 0.4, Wt 90 g.

C. retusus is considered a rare species even among local people, probably due to its fossorial habits and low population. It is mostly confined to the more xeric portions of Bolivia, however the holotype came from the city of Santa Cruz de la Sierra (Anderson, 1997). This suggests that the distribution of *C. retusus* possibly extends to the north of the distribution normally described (Eisenberg and Redford, 1999), although there are no recent records from the vicinity of the city. As is the case in other parts of its range (Mares *et al.*, 1989), the future of *C. retusus* is uncertain in the Izozog area of the Bolivian Chaco. With well-protected areas and considerable amounts of land (3.5 million ha), the Kaa-Iya National Park should ensure the conservation of this species in the Bolivian Gran Chaco.

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The Disjunct Geographical Distribution of the Yellow Armadillo, *Euphractus sexcinctus* (Xenarthra, Dasypodidae)

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The geographic distribution of the yellow armadillo (*Euphractus sexcinctus*) appears to be disjunct. According to Wetzel (1985a, 1985b) and Redford and Wetzel (1985), the species occurs in north-eastern, middle-western, southeastern and southern Brazil, as well as adjacent areas of Bolivia, Paraguay, Uruguay and Argentina. There is, however, a small isolated occurrence in the frontier region between Brazil and Suriname, north from the Rio Amazonas. Wetzel (1985a, 1985b) and Redford and Wetzel (1985) omitted these localities, although they were briefly described by Wetzel (1985b) as "The Sipaliwini savanna and its continuation as the Paru savanna in adjacent Pará". Wetzel (1985b) emphasized the need for further surveys of the geographic distribution of *E. sexcinctus* in the region of the lower Rio Amazonas.

An examination of the mammal collection of the Museu Paraense Emílio Goeldi (MPEG), the Museu Nacional, Universidade Federal do Rio de Janeiro (MNRJ) and the Museu de Zoologia of the Universidade de São Paulo (MZUSP), and the results of a faunistic inventory recently conducted in the Brazilian state of Amapá, suggest that the

disjunct area may be even larger than previously thought. The specimens collected were deposited in the MPEG.

The new localities in this region are (Fig. 1): 1. Fazenda Itapuá, AP-156 road, municipality of Amapá, 02°05'N, 50°55'W (MPEG-26264); 2. Fazenda Teimoso, AP-156 road, municipality of Ferreira Gomes, 00°59'N, 51°11'W (MPEG-26262, 26263); 3. Porto Platon, 00°42'N, 51°57'W (MNRJ-23972); 4. Fazenda Parabrillo, municipality of Itaubal, 00°46'N, 50°54'W (MPEG-26265).

The first two localities are in Amazonian savanna type vegetation, grassland with few shrubs and low trees (*campo cerrado*). Porto Platon is located in a forested area, but the specimen label does not contain information on mesohabitat. The Fazenda Parabrillo is located in the contact zone between the *campo cerrado* and the *floresta de terra firme*, and the local physiognomy is of a disturbed "cerrado *sensu stricto*" (about 20 years ago), with a high density of trees and shrubs.

The geographic distribution of *E. sexcinctus* is being systematically surveyed in eastern Amazonia. The data presented here, together with the 27 new localities in Maranhão (Silva Júnior *et al.*, 2001), significantly reduce the size of the area separating the two parts of the known geographic distribution of this species.

Further surveys are planned in eastern Pará to determine if the separation is merely an artifact of sampling. If the geographic distribution for *E. sexcinctus* is continuous, it will also be necessary to determine if the species occurs in the primary forests of the lower Rio Amazonas or if it is restricted to the natural *campos cerrados* and *campinas* of Amapá, Marajó Archipelago and eastern Pará, and areas of degraded forest.

Specimens examined

Specimens examined in the MPEG, MNRJ, and MZUSP for comparison: *Euphractus sexcinctus*. **Brazil: Amapá:** Fazenda Itapuá, Amapá